apple computer

UNIDISK TECHNICAL PROCEDURES

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UniDisk Technical Procedures

Section 1

Troubleshooting
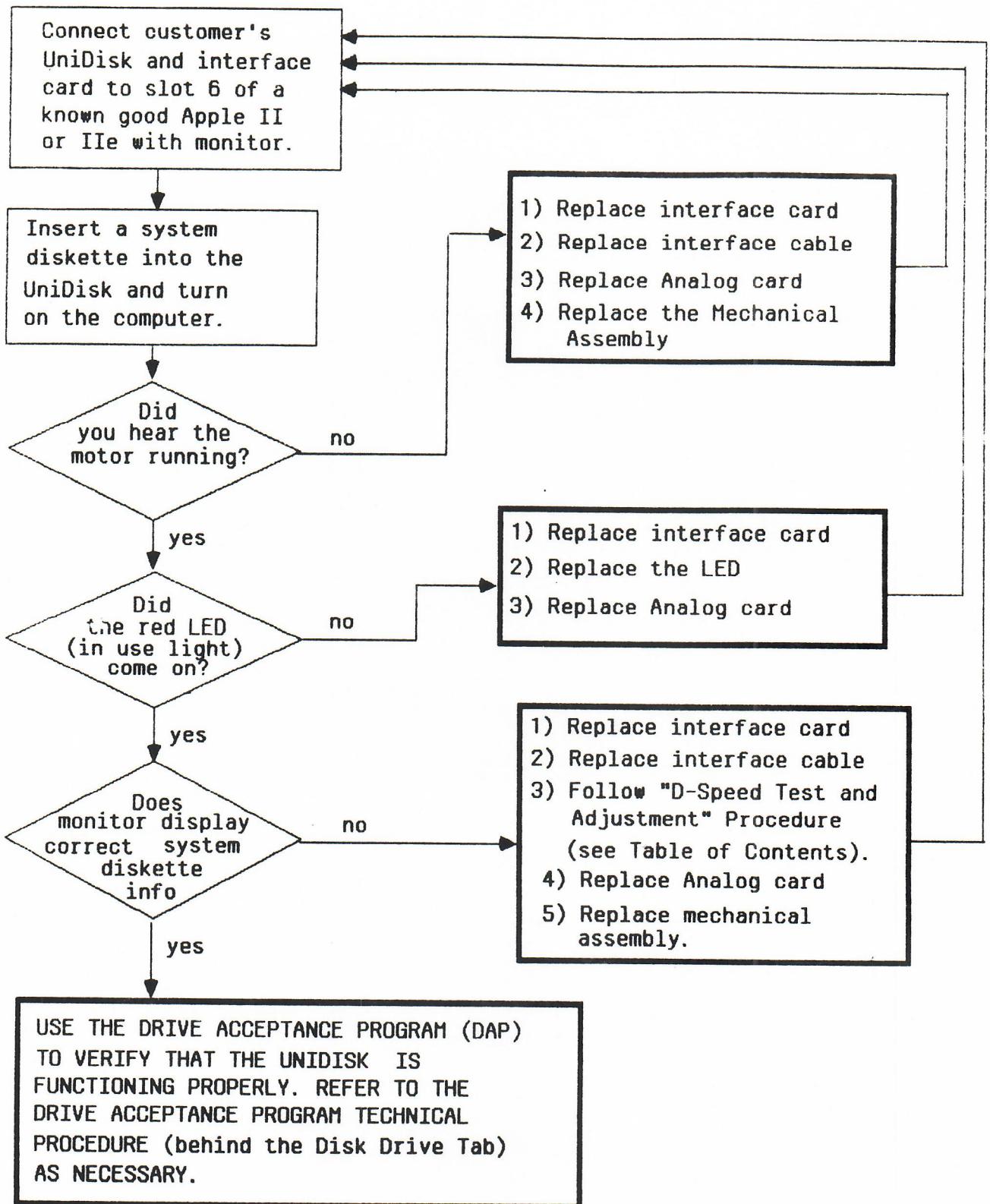
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Using the Troubleshooting Flowchart

Whenever a customer brings in a presumably bad UniDisk, use the flowchart on the following page as a troubleshooting guide. Begin with the box in the upper left corner of the page. When you get to one of the answer boxes (with dark borders), swap the modules, one at a time, in the order in which they are listed. Each time you swap out a module, go back to the beginning of the flowchart. Turn on the computer and see if you can boot a system diskette (preferably DOS 3.3 System Master).

Once you are able to boot the system diskette, be sure to run the Drive Acceptance Program (P/N 077-8108), performing any adjustments necessary. Reinstall the customer's modules, one at a time, running the Drive Acceptance Program after each exchange to isolate the bad modules.

NOTE: If you do not know how to connect the UniDisk to an Apple computer, refer to the UniDisk Owner's Manual for instructions.

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UniDisk Troubleshooting Flowchart

```
┌─────────────────────┐
│ Connect customer's  │
│ UniDisk and interface│
│ card to slot 6 of a │
│ known good Apple II │
│ or IIe with monitor.│
└─────────────────────┘
```

```
┌─────────────────────┐
│ Insert a system     │
│ diskette into the   │
│ UniDisk and turn    │
│ on the computer.    │
└─────────────────────┘
```

```
┌─────────────────────────────────────┐
│ 1) Replace interface card            │
│ 2) Replace interface cable           │
│ 3) Replace Analog card               │
│ 4) Replace the Mechanical            │
│    Assembly                          │
└─────────────────────────────────────┘
```

Did you hear the motor running? → no

yes

```
┌─────────────────────────────────────┐
│ 1) Replace interface card            │
│ 2) Replace the LED                   │
│ 3) Replace Analog card               │
└─────────────────────────────────────┘
```

Did the red LED (in use light) come on? → no

yes

```
┌─────────────────────────────────────┐
│ 1) Replace interface card            │
│ 2) Replace interface cable           │
│ 3) Follow "D-Speed Test and          │
│    Adjustment" Procedure             │
│    (see Table of Contents).          │
│ 4) Replace Analog card               │
│ 5) Replace mechanical                │
│    assembly.                         │
└─────────────────────────────────────┘
```

Does monitor display correct system diskette info → no

yes

```
┌─────────────────────────────────────────┐
│ USE THE DRIVE ACCEPTANCE PROGRAM (DAP)   │
│ TO VERIFY THAT THE UNIDISK  IS           │
│ FUNCTIONING PROPERLY. REFER TO THE       │
│ DRIVE ACCEPTANCE PROGRAM TECHNICAL       │
│ PROCEDURE (behind the Disk Drive Tab)    │
│ AS NECESSARY.                            │
└─────────────────────────────────────────┘
```

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DuoDisk Technical Procedures

Section 2

Adjustments

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D-SPEED TEST AND ADJUSTMENT

Required Materials and Set Up

1. Set up a known good Apple II or IIe.

2. Connect a known good disk drive and interface card to slot 6 of the computer. You do not have to use another UniDisk.

   NOTE: If you do not know how to do this, refer to the Apple II owner's manual.

3. Install a known good UniDisk interface card into slot 5 of the computer.

4. Connect the UniDisk to be tested to the interface card in slot 5.

5. Obtain the following materials:

   a) Disk Alignment Aid (P/N 077-0031).

   b) A unprotected blank (scratch) diskette.

   c) A small (jeweler's) flatblade screwdriver.

The Test:

1. When the system is set up, insert the unprotected blank diskette into the UniDisk.

2. Place the Disk Alignment Aid in the known good drive (connected to slot 6) and turn on the computer. If you're using the Apple IIe, make sure that the CAPS LOCK key is down.

3. When the menu comes up, **SET TARGET DISK** will be highlighted. Type **A** to accept it.

   NOTE: If a menu selection is highlighted, typing **A** (accept) accepts the entry. Typing **S** (skip) causes the cursor to go to the next menu selection.

4. The display will prompt you to select the slot and the
    drive. To change the default (slot 6) to slot 5, do the
   following:

    Type **A**. **6** now appears under the word ALTERNATE.
    Type **S**. The **6** (above) will change to a **5**.
    Type **A**. This accepts slot 5.

5. Press <ESCAPE> to return to the main menu.

6. To select the **D-Speed** test, type **S** (three times) to move
    the cursor to the D-Speed option, then type **A** to accept
    this option.

7. The screen will warn you that the test will write on the
    diskette in slot 5, drive 1. Make sure that there is an
    unprotected blank diskette in drive 1 of the UniDisk and
    type **A** to start the test.

    The display that appears will be similar to the diagram
    shown below. The current marker (/\) in the middle
    indicates the actual speed of the drive. You should see
    constantly changing numbers just below the current
    marker. The acceptable range is +26 to -26. (See
    diagram below.)
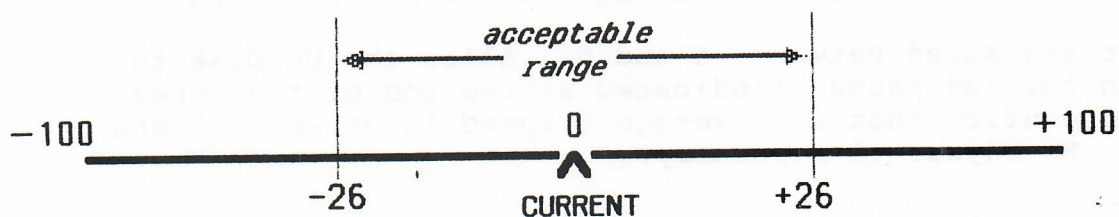
IF:

1. The D-Speed display does not remain on the screen, <u>or</u>

2. You get an ERROR message, <u>or</u>

3. You do not see constantly changing numbers located below the current marker,

THEN PERFORM THESE STEPS, starting with step 1:

1. Replace the analog card, and try the test again.

2. Replace the mechanical assembly, try the D-Speed test again.

8. Is the drive speed within range (+26 to -26)?

    Yes -- Press <u>\<ESCAPE\></u> to stop the test. Go to Step 13.

    No -- Continue with the next step.

9. Locate the D-Speed adjustment hole under the drive being tested so the adjustment can be made. It is a small hole next to the rubber foot pad on your right (when facing the drive) and nearest the front of the drive. The adjustment screw is located inside the hole.

    NOTE: When making the D-Speed adjustment, keep the UniDisk flat.

10. The adjustment is extremely sensitive, so <u>very</u> slowly turn the adjustment screw. The indicator on the screen moves back and forth, showing changes of the speed.

11. Set the speed between -5 and 0. Allow the UniDisk to run for 128 passes (indicated at the top of the screen), and confirm that the average D-Speed is between -5 and 0. Re-adjust if necessary.

12. Is the D-Speed now within range?

   Yes -- Press <ESCAPE> to return to the main menu.
        Continue on to the next step.

   No -- If the D-Speed cannot be properly adjusted,
             return the UniDisk to Apple.

13. Press <ESCAPE> to return to the menu, and remove the
     Disk Alignment Aid from the UniDisk.

14. Use the Drive Acceptance Program (DAP) to verify that
     the UniDisk is functioning properly. Refer to the Drive
     Acceptance Program Technical Procedure (behind the Disk
     Drive tab) as necessary.

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DuoDisk Technical Procedures

Section 3

Take-Apart

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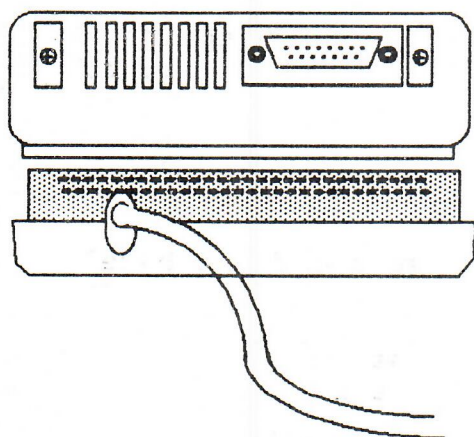**FIGURE 1**

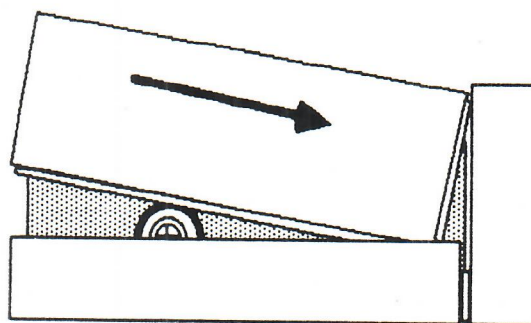**FIGURE 2**

FIGURE 3

FIGURE 4

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Removing the Cover and Shield

1. If the drive is connected to a computer, power off the computer and disconnect the UniDisk.

2. Check to make sure that there is no diskette inside the UniDisk.

3. Turn the UniDisk upside down and remove the four Phillips screws (Figure 1, #1).

4. Orient the UniDisk so that the back is facing you and remove the two Phillips screws (Figure 2, #1).

5. Pull up on the back of the cover until it clears the cable as shown in Figure 3. Slide cover back and away from the drive.

6. Remove the screw which secures the shield (top metal plate) to the chassis.

7. Pull up on the back edge of the shield and lift the shiel off.

Replacing the Cover and Shield

1. Replace the shield by fitting the front prongs into place, then lowering the back until the shield is flush with the chassis.

2. Position the ground strap over the mounting hole at the rear of the shield. Replace the Phillips screw to secure the shield and ground strap to the chassis.

3. Fit the cable brace into the cutout at the back of the plastic case. (See Figure 6, #1.)

4. Slide the front edge of the cover against the front bezel as shown in Figure 4.

5. Push forward on the cover as you lower the back over the cable until the cover is flush against the bottom.

6. Turn the UniDisk upside down and replace the four Phillips screws (Figure 1, #1).

7. Position the Unidisk so that the back is facing you and replace the two Phillips screws (Figure 2, #1).
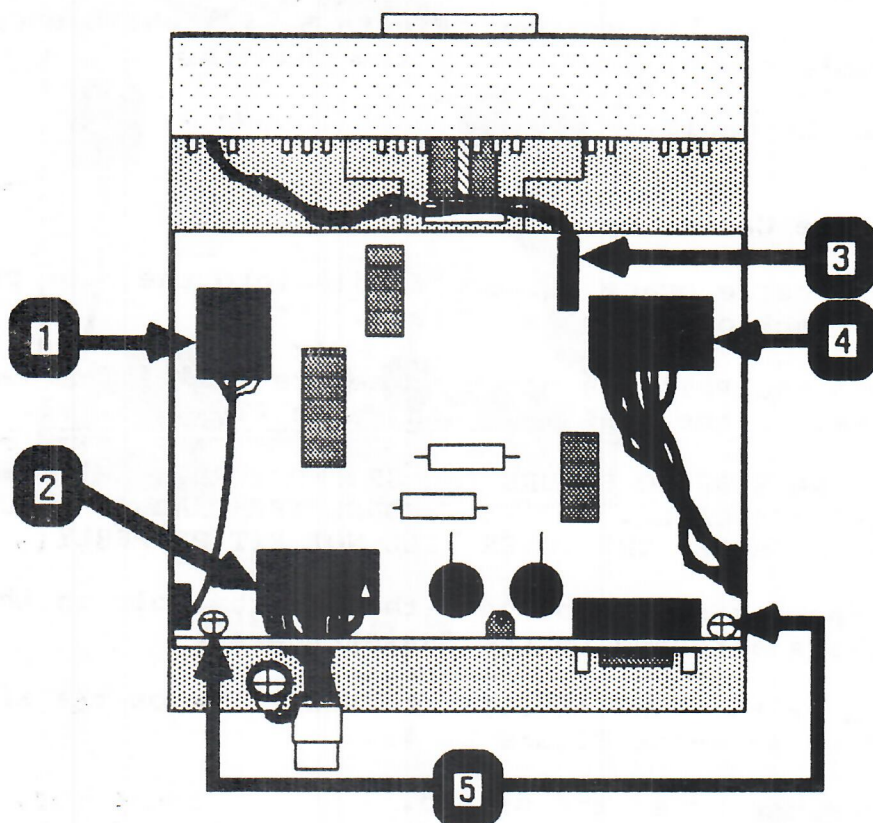
FIGURE 7

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Removing the Analog Baord

1. Remove the cover and shield.

2. Disconnect the following connectors:

    NOTE: When disconnecting connectors, always pull on the connector housing, not on the wires.

    a) head connector J4 (Figure 7, #1) - fits only one way

    b) bus connector J2 (Figure 7, #2) - white arrow on top

       Note: Pull the bus connector back through the metal backplate attached to the analog board.

    c) LED connector J5 (Figure 7, #3)

    d) stepper motor connector J1 (Figure 7, #4) - note position of wires in Figure 7

3. Remove the two Phillips screws (Figure 7, #5) which secure the analog board to the chassis.

4. Carefully lift the analog board off of the chassis.

Replacing the Analog Board

1. Lift the connector wires away from the mechanical assembly.

2. Slide the front end (opposite the DB-19 connector) of the analog board between the supports at front of the chassis walls.

    CAUTION: Be careful not to pinch the connector wires while positioning the analog board.

3. Route the connector wires through the cutouts provided at either side of the analog board.

4. Connect the following connectors listed in step 2 of "Removing the Analog Board".

5. Replace the two Phillips screws (Figure 7, #5) to secure the analog board to the chassis.

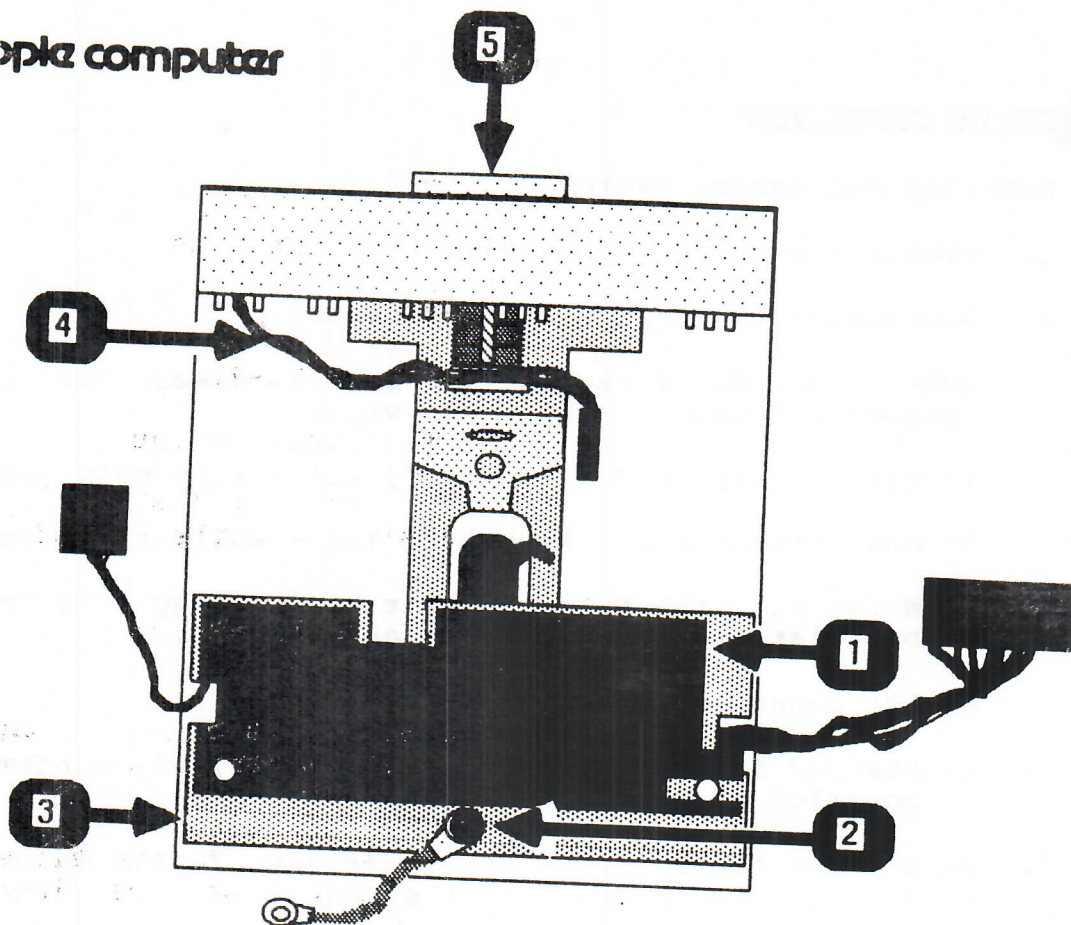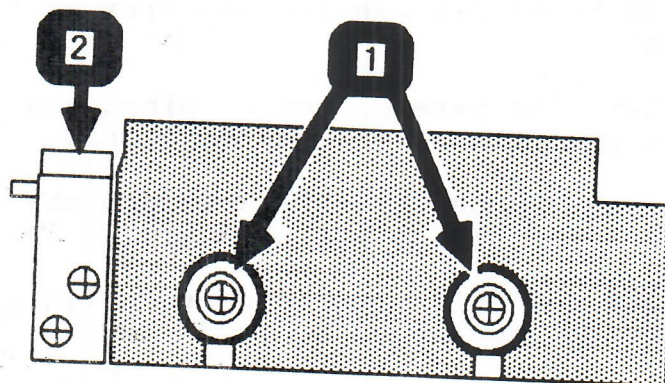6. Replace the cover and shield.

FIGURE 8

FIGURE 9

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Removing the Mechanical Assembly

1. Remove the cover and shield (see Contents).

2. Remove the cable (see Contents).

3. Remove the analog board (see Contents).

4. Remove the the black insulation paper (Figure 8, #1).

5. Remove the Phillips screw (Figure 8, #2) which secures the ground strap to the chassis. Set the ground strap aside.

6. Lift the off metal shield (Figure 8, #3) and set it aside.

7. Grasp the LED wires (Figure 8, #4) as close to the front bezel as possible and pull the LED lamp out of the front bezel.

8. Lift up on the back of the metal chassis and slide it completely out of the plastic case. Set the plastic case aside.

9. Orient the drive as it is shown in Figure 9. Remove the two Phillips screws (Figure 9, #1) on each side of the drive.

10. Lift up on the sub-bezel (Figure 9, #2) and carefully slide the mechanical assembly out of its metal enclosure.

Replacing the Mechanical Assembly

1. Place the mechanical assembly back inside its metal enclosure.

2. Replace the Phillips screws (Figure 9, #1) on both sides of the drive to secure the mechanical assembly inside the metal enclosure.

3. Replace the metal shield (Figure 8, #3), routing the cables through the cutouts at the sides of the shield. (See Figure 8.)

4. Place the black insulation paper (Figure 8, #1) on the metal shield as shown in Figure 9.

5. Replace the silver Phillips screw (Figure 8, #2) to secure one end of the ground strap to the chassis.

6. Locate the plastic case and insert the LED into the cutout provided at the front.

7. Close the door (Figure 8, #5) of the mechanical assembly.

8. Hold the LED wire out of the way while you carefully slide the mechanical assembly into its plastic case.

9. Replace the analog board (see Contents).

10. Replace the cable (see Contents).

11. Replace the cover and shield (see Contents).

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Installing a DuoDisk Mechanical Assembly into a UniDisk Case

The DuoDisk and UniDisk mechanical assemblies are identical
except for the sub-bezels attached to the front. Before
installing a DuoDisk mechanical assembly into a UniDisk case,
check to see if the sub-bezel are different. (See diagram
below.) If you are installing a DuoDisk mechanical assembly
that has not already been upgraded, follow the steps below to
swap the sub-bezels.

UniDisk

Note different
rectangular shapes
within bracket
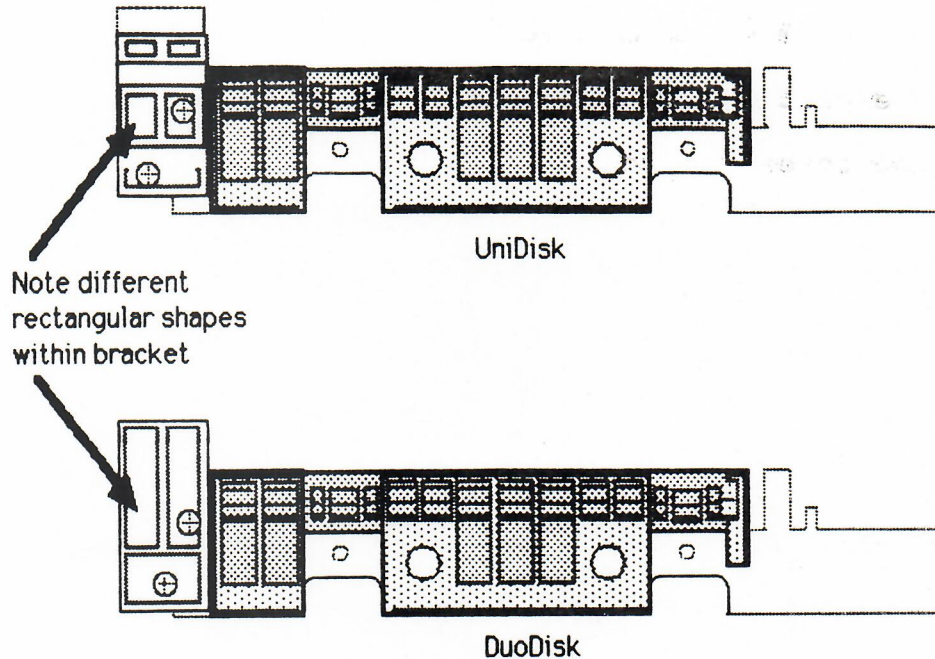
DuoDisk

1. Remove the two Phillips screws at both sides of the
    UniDisk sub-bezel and set it aside.

2. Remove the Phillips screws at both sides of the Duodisk
    sub-bezel and attach the sub-bezel to the UniDisk
    mechanical assembly. Tighten the screws to secure the
    sub-bezel to the mechanical assembly.

    NOTE: A DEFECTIVE MECHANICAL ASSEMBLY MUST BE RETURNED
    TO APPLE COMPLETE WITH THE SUB-BEZEL ATTACHED.

3. Attach the UniDisk sub-bezel to the DuoDisk mechanical
    assembly and tighten the screws to secure it.

4. Follow the steps listed under "Replacing the Mechanical
    Assembly" to install the Duodisk mechanical into the
    UniDisk case.

UniDisk Technical Procedures

Section 4
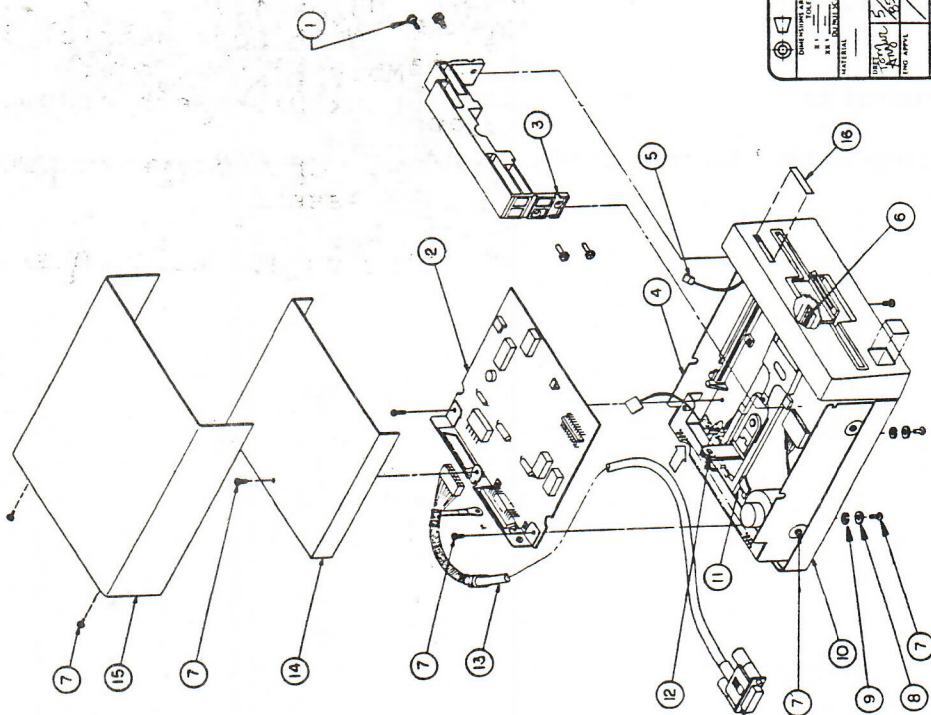
Illustrated Parts List

The figures and lists below include all piece parts that can be purchased separately from Apple for the Unidisk, along with their part numbers. These are the only parts available from Apple. Refer to your Apple Service Programs manual for prices.

Contents:

ILLUSTRATED PARTS
LIST
UNIDISK

apple computer inc.

NOTICE OF PROPRIETARY PROPERTY
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PARTS LIST HELD BY APPLE SERVICE TRAINING.

METRIC

SERVICE

C 070-0237-A

SCALE NONE

REVISION

REV	ZONE	ECO #		APPD	DATE
A		5493	INITIAL RELEASE		

NOTE: UNLESS OTHERWISE SPECIFIED

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UNIDISK

Item	Part No.	Description
1	400-3604	Screw, 6-32x 1/4, Pozi-Dr. Flt.
2	661-0287	Analog Card, UniDisk
3	970-1258	Sub-bezel Uni/DuoDisk
4	805-0890	Shield, Bottom
5	590-0140	Assembly, Cable, LED, D1
6	870-0023	Spring
7	400-1604	Screw, 6-32x 1/4
8	860-0242	Washer, M3.5x 4.0 I.D. x 7.0 O.D.
9	860-0053	Washer, Split Lock Metric, 3.5m
10	675-5101	Subassembly Bottom Cover
11	661-72128	Uni/DuoDisk Disk Mech Assembly
12	U815-0064	Load Button
13	590-0327	Assembly, Cable Drive to CPU
14	675-5103	Top Case Assembly
15	805-0891	Shield, Top
16	825-0548	Label, Drive #, Uni/DuoDisk